

### Bellwork 3/1/13

1) One factor of  $f(x) = 3x^3 + 8x^2 - 57x + 18$  is  $(x-3)$ . What are the other two factors? 18

$$\begin{array}{r} 3 \overline{) \begin{array}{rrrr} 3 & 8 & -57 & 18 \\ \downarrow & 9 & 51 & -18 \\ \hline 0 & -1 & -6 & 0 \end{array}} \\ \begin{array}{l} 3x^2 + 17x - 6 \\ (3x^2 + 18x - 1x - 6) \\ \hline 3x(x+6) - 1(x+6) \end{array} \end{array}$$

Factors:  $(3x-1)(x+6)(x-3)$

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Algebra 2  
5.5 - Graphing Polynomials WKST 1

Name: \_\_\_\_\_  
Date: \_\_\_\_\_ Pd: \_\_\_\_\_

Graph the function on the graph on the right

1)  $f(x) = 2x^3 + 3x^2 - 8x + 3$   
 $2(0)^3 + 3(0)^2 - 8(0) + 3$

Maximum # of roots: 3

$$\frac{1, 3}{1, 2}$$

Possible rational roots:  
 $\pm 1, \pm 3, \pm \frac{1}{2}, \pm \frac{3}{2}$

Factored form:  $(x-1)(2x-1)(x+3)$

Actual roots:  $1, \frac{1}{2}, -3$

$x=0$   $(0, 3)$  odd  $\oplus$  end behavior: down left, up right

$$\begin{array}{r} 1 \overline{) \begin{array}{rrrr} 2 & 3 & -8 & 3 \\ \downarrow & 2 & 5 & -3 \\ \hline 0 & 1 & -13 & 6 \end{array}} \\ \begin{array}{l} 2x^2 + 5x - 3 \\ (2x^2 + 6x - 1x - 3) \\ \hline 2x(x+3) - 1(x+3) \end{array} \end{array}$$

2)  $f(x) = -x^3 + 2x^2 + 13x + 10$

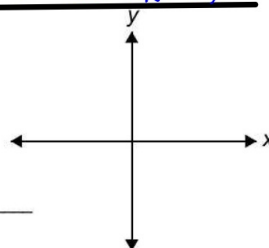
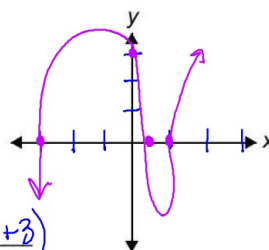
Maximum # of roots: \_\_\_\_\_

Possible rational roots: \_\_\_\_\_

Factored form: \_\_\_\_\_

Actual roots: \_\_\_\_\_

y-intercept = \_\_\_\_\_ end behavior: \_\_\_\_\_ left, \_\_\_\_\_ right.



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3)  $f(x) = x^4 + x^3 - 13x^2 - 25x - 12$

Maximum # of roots: \_\_\_\_\_

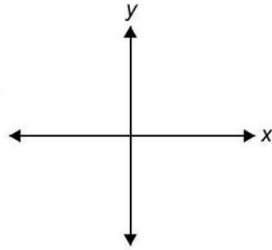
Possible rational roots: \_\_\_\_\_

Factored form: \_\_\_\_\_

Actual roots: \_\_\_\_\_

y-intercept = \_\_\_\_\_

end behavior: \_\_\_\_\_ left, \_\_\_\_\_ right.



4)  $f(x) = -6x^4 + 11x^3 + 51x^2 - 99x + 27$

$-1(6x^4 - 11x^3 - 51x^2 + 99x - 27)$

Maximum # of roots: 4

$\begin{array}{r} 1 \ 3 \ 9 \ 27 \\ 1 \ 2 \ 3 \ 6 \end{array}$

Possible rational roots:  $\pm 1, 3, 9, 27, \frac{1}{2}, \frac{1}{3}, \frac{1}{6}, \frac{3}{2}, \frac{3}{3}, \frac{9}{2}, \frac{9}{3}, \frac{27}{2}, \frac{27}{3}$

Factored form:  $-1(x-3)(x+3)(3x-1)(2x-3)$

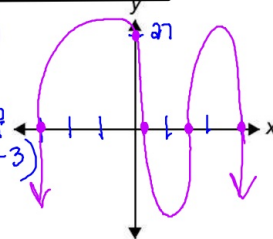
Actual roots: 3, -3,  $\frac{1}{3}$ ,  $\frac{3}{2}$

y-intercept = (0, 27)

end behavior: down left, down right.

$\begin{array}{r} 3 \overline{) 6 \ -11 \ -51 \ 99 \ -27} \\ + \downarrow \ 18 \ 21 \ -90 \ 27 \\ \hline -3 \overline{) 6 \ 7 \ -30 \ 9 \ 0} \\ + \downarrow \ -18 \ 33 \ -9 \\ \hline 6 \ -11 \ 3 \ 0 \end{array}$

$\begin{array}{r} 6x^2 - 11x + 3 \\ (6x^2 - 9x) - (2x - 3) \\ 3x(2x - 3) - 1(2x - 3) \\ (3x - 1)(2x - 3) \end{array}$



## Homework: Graphing Polynomials Wkst 2

